PATENT APPLICATION TRANSMITTAL LETTER

TO THE ASSISTANT DIRECTOR OF PATENTS:

Transmitted herewith for filing is the patent application identified as follows:

Inventors: Mitchell TULLER, Mei COSTIGAN, and Simon KHILKEVICH

Title: Methods and Systems for Automated Information Retrieval

Enclosed are:

Fifty-four (54) Sheets of Specification, including 16 sheets of claims and an Abstract
Nine (9) Sheets of Drawings (Figures 1-9)
Declaration and Power of Attorney for Patent Application (Unsigned)
Transmittal of Application Under 37 CFR 1.41(c)
Check in the amount of $2,176.00

The filing fee has been calculated as follows:

	CLAIMS AS FILED Number Filed/Paid For	Number Extra	Rate	Fee
BASIC FEE			$760	$760
TOTAL CLAIMS	90/20	70	$18	$1260
INDEPENDENT CLAIMS	5/3	2	$78	$ 156
MULTIPLE DEPENDENT CLAIM PRESENT - NO			$260	$ 0
	FEE TOTAL			$2,176

Enclosed is a check in the amount of $2,176 to cover the filing fees. The Director is hereby authorized to charge any additional fees required by this action, or credit any overpayment to Deposit Account No. 11-0855. A duplicate of this sheet is attached for that purpose.

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Respectfully Submitted,

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T0091-184563
WINLIB01:826432
Express Mail No. EL 146845911 US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Mitchell TULLER, Mei COSTIGAN, and Simon KHILKEVICH
Serial No.	:	To be Assigned
Filing Date	:	Transmitted Herewith
For	:	Methods and Systems for Automated Information Retrieval

Assistant Director for Patents
Box: PATENT APPLICATION
Washington, D.C. 20231

TRANSMITTAL OF APPLICATION UNDER 37 CFR 1.41(c)

Sir:

The undersigned attorney hereby makes application for U.S. Letters Patent on behalf of Applicants Mitchell TULLER, Mei COSTIGAN, and Simon KHILKEVICH, whose addresses and citizenship are as follows:

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Applicants claim the benefit, under 35 USC § 119, of U.S. Provisional Application Serial Number 60/138,348 filed 6/9/1999 entitled: "System and Method for Automated Information Retrieval (AIRS)."

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T0091-184564
WINLIB01:826433.01
Express Mail No. EL 146845911 US

CITI0134 AIRS

In re application of:	Mitchell Tuller, Mei Costigan, and Simon Khilkevich
For:	Methods and Systems for Automated Information Retrieval
Serial No.:	Unassigned
Filing Date:	*06*/06/2000
Express Mail Number:	EL 146845911 US

The Following Was Received by the PTO:

☒Fifty-four (54) Sheets of Specification, including Abstract and Claims;
☒Nine (9) pages of drawings (Figures 1-9);
☒Declaration and Power of Attorney (Unsigned);
☒Transmittal of Application Under 37 CFR 1.41(c);
☒Patent Application Transmittal Letter;
☒Check in the amount of $2,176;
☒Express Mail Certificate

Date Mailed to PTO:06/06/2000
Client Matter No.T0091-184563
WINLIB01:826449.01

EXPRESS MAIL CERTIFICATE

"Express Mail" mailing label number:	EL 146845911 US
Date of Deposit:	June 6, 2000
Type of Document(s):	Fifty-four(54) Sheets of Specification, Abstract, and Claims; Nine (9) pages of drawings (Figures 1-9); Declaration and Power of Attorney (Unsigned); Transmittal of Application Under 37 CFR 1.41(c); Patent Application Transmittal Letter; Check in the amount of $2,176.00; and Return postcard
Serial No.:	Unassigned
Date Filed:	Herewith

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T0091-184563
WINLIB01:826439.01

TITLE OF THE INVENTION

METHODS AND SYSTEMS FOR AUTOMATED INFORMATION RETRIEVAL

PRIORITY APPLICATION

This application claims the benefit of US Provisional Application No. 60/138,348 filed June 9, 1999, entitled "System and Method for Automated Information Retrieval (AIRS)," and is incorporated herein by reference.

CROSS REFERENCE TO RELATED APPLICATIONS

This application is related to US Application Serial No. 09/551930, filed April 19, 2000, entitled "Platform-Independent Exceptions-Based Methods and Systems for Remotely Managing Nodes Within a Communications Network," and is incorporated herein by reference.

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BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to computerized information retrieval systems and, more particularly, to automated methods and systems for selecting, retrieving, storing, and managing transaction logs and other data, such as, for example, data from automated teller machines, financial institution servers, and almost any network node device.

2. Background

Transaction logs are records of customer activity on a particular Automated Teller Machine (ATM) or a particular network node device. They are used for a number of important purposes. One important purpose, for example, is for problem resolution. If a customer has a dispute about a transaction that took place at an ATM, the transaction log provides a record of at least one side of the issue. Another important purpose, for example, is to track overall activity at an ATM or for a set of ATMs to understand customer usage patterns. Still, another important purpose, is to facilitate compliance with government reporting regulations.

The current process that businesses, such as financial institutions, undergo in collecting ATM transaction logs and other data is manual and requires tremendous manpower and coordination efforts. This problem is not restricted to a particular financial institution but is an industry-wide problem. Thus, there is a current need for an automated mechanism for selecting, retrieving, storing, and managing transaction logs

and other data, which would provide a tremendous savings in terms of both time and money on an industry-wide basis.

SUMMARY OF THE INVENTION

To overcome these problems, the present invention provides easy, reliable, and efficient methods and systems for automatically selecting, retrieving, storing, and managing transaction logs and other data, such as, for example, data from automated teller machines, financial institution servers, and almost any network node device.

In a preferred embodiment of the present invention, the methods and systems can be configured to automatically select, retrieve, store, and manage various types of files, with each type of file having its own frequency of upload, upload schedule, destination directory, and the like. In an another embodiment, the methods and systems can be configured to automatically select, retrieve, store, and manage various types of files for nodes that have missed days (i.e., days when the node is down, such as when the node is out of service) of data and that have other missing data. In an another embodiment, the methods and systems can be configured to prioritize the selection, retrieval, storage, and management of various types of files, including files for nodes that have missed days or that have other missing data.

In an embodiment of the methods and systems of the present invention, a network provides a front end interface, such as, for example, in the form of a computer software application that provides a template for viewing, selecting, and entering information in order to select, retrieve, store, and manage transaction logs and other data. For example, instead of manually gathering ATM transaction logs at an ATM site, log retrievals are

automatically selected, retrieved, and stored in an electronic transfer medium.

In an embodiment of the present invention, the automated information retrieval system is an interactive Graphical User Interface (GUI) and service application projected upon a client terminal running X Windows coupled with a network management system server that is connected to a network. As will be appreciated by those in the art, the invention could also be implemented using a variety of hardware platforms and operating systems, such as, for example, a JAVA program capable of running on any platform that has a JAVA Runtime Environment (JRE), such as, JRE version 2.0.

In an embodiment of the present invention, the user modules represent screens displayed on a client terminal and allow a user to view, input, select, and/or transmit data. For example, the user module known as the "Status" Module allows a user to monitor network node devices and to display the retrieval status for various file types (e.g., transaction log, etc.) of the selected network node device. The retrieval status is refreshed periodically based on the configuration value parameters assigned by an Administrator. A user can also force an immediate status refresh by clicking on a button at the bottom of the screen.

In addition to providing the methods and systems outlined above, the present invention: (1) operates on a multitude of hardware platforms and/or operating systems; (2) provides real-time retrieval of transaction logs and other data; (3) utilizes a user-friendly interactive user interface; (4) provides highly configurable retrieval commands; (5) facilitates automated commands to the network node devices; (6) facilitates automated responses from the network node devices to the network management system

server; and (7) utilizes the network to reach the nodes instead of specialized lines.

In different possible embodiments of the present invention, the methods and systems may be utilized to perform one or more of the following tasks: (1) provide integration with external systems; (2) provide integration with other internal systems; (3) utilize internally maintained data; (4) provide on-line network node device data; (5) allow for real-time system modifications and system configuration; (6) provide detailed reports; and/or (7) utilize state-of-the-art communications technology (e.g., web-based technology).

In a first illustrative embodiment, a platform-independent method for retrieving and managing data in at least one communications network having a plurality of destination nodes interconnected with communication lines, comprises:

remotely accessing a communications network;

remotely configuring a retrieval command associated with a destination node;

remotely transmitting said retrieval command to said destination node;

remotely monitoring said retrieval command associated with said destination node;

remotely transmitting a response from said destination node to said retrieval command;

remotely monitoring said response from said destination node to said retrieval command; and

remotely storing said response from said destination node to said retrieval

command.

In this first illustrative embodiment, the method may further comprise:

remotely prioritizing said retrieval command associated with said destination node;

remotely prioritizing said response from said destination node to said retrieval command;

remotely executing an automated retrieval schedule;

remotely constructing a response log;

remotely administering said response log; and

remotely printing said response log.

In a second illustrative embodiment, a platform-independent system for retrieving and managing data in at least one communications network having a plurality of destination nodes interconnected with communication lines, comprises:

means for remotely accessing said communications network;

means for remotely configuring a retrieval command associated with a destination node;

means for remotely transmitting said retrieval command to said destination node;

means for remotely monitoring said retrieval command associated with said destination node;

means for remotely transmitting a response from said destination node to said retrieval command;

means for remotely monitoring said response from said destination node to said retrieval command; and

means for remotely storing said response from said destination node to said retrieval command.

In this second illustrative embodiment, the system may further comprise:

means for remotely prioritizing said retrieval command associated with said destination node;

means for remotely prioritizing said response from said destination node to said retrieval command;

means for remotely executing an automated retrieval schedule;

means for remotely constructing a response log;

means for remotely administering said response log; and

means for remotely printing said response log.

In a third illustrative embodiment, a method for selecting, prioritizing, retrieving, storing, and managing data within network nodes, comprises:

configuring a request from a user to a network node;

transmitting said request to said network node;

processing said request associated with said network node;

transmitting a response from said network node to said request;

processing said response from said network node to said request; and

storing said response from said network node to said request.

In this third illustrative embodiment, the method may further comprise:

constructing a response log;

administering said response log;

printing said response log;

prioritizing said request associated with said network node;

prioritizing said response from said network node to said request;

constructing an automated retrieval schedule;

executing said automated retrieval schedule; and

managing said response associated with said network node.

In a fourth illustrative embodiment, a system for selecting, prioritizing, retrieving, storing, and managing data within network nodes, comprises:

means for configuring a request from a user to a network node;

means for transmitting said request to said network node;

means for processing said request associated with said network node;

means for transmitting a response from said network node to said request;

means for processing said response from said network node to said request; and

means for storing said response from said network node to said request.

In this fourth illustrative embodiment, the system may further comprise:

means for constructing a response log;

means for administering said response log;

means for printing said response log;

means for prioritizing said request associated with said network node;

means for prioritizing said response from said network node to said request;

means for constructing an automated retrieval schedule;

means for executing said automated retrieval schedule; and

means for managing said response associated with said network node.

In the first, second, third, and fourth illustrative embodiments, the present invention may include an automated mechanism to indicate the retrieval status of data from a node. This retrieval status indicates whether a retrieval (1) was never attempted, (2) was successful, (3) is not available, (4) is out of range (e.g., date is out of configuration parameters), (5) failed, and/or (6) in progress. The automated mechanism to indicate the retrieval status may be configured to retrieve data from nodes using (1) an upload frequency, (2) an upload schedule, and/or (3) a destination directory.

In these four illustrative embodiments, configuration of the retrieval command may include parameters for (1) minimum time to retry if retrieval failure, (2) maximum number of simultaneous retrievals, (3) file type, (4) file type name, and (5) archive directory. Configuration of the retrieval command may also include parameters for (1) at least one selected day, (2) at least one selected hour, (3) at least one selected said destination node, (4) at least one missed day, (5) at least one missed hour, (6) at least one disconnected destination node, (7) at least one down destination node, and (8) at least one exception-reported destination node.

Further, in these four illustrative embodiments, a user may enable node filtering and select particular node types, nodes affiliated with a particular business, or nodes affiliated with a particular business branch.

In a fifth illustrative embodiment, a platform-independent system for retrieving and managing data in at least one communications network having a plurality of destination nodes interconnected with communication lines, comprises:

a network automated information retrieval system coupled to at least one communications network having a plurality of nodes;

an interactive user module coupled with a network management system server connected to said communications network having a plurality of nodes;

a plurality of client terminals coupled to said interactive user module for user interaction with said network automated information retrieval system.

In this fifth illustrative embodiment, the interactive user module may be communicated by a service application of said automated information retrieval system to said network management system server. Alternatively, it could be communicated to one of a internet, an intranet, or an extranet.

In this fifth illustrative embodiment, the system further comprises a request that is communicated to the automated information retrieval system by user interaction with an interactive user module. The request represents a retrieval command to query at least one destination node. Additionally, the interactive user module may comprise (1) an administrator module, (2) an operator module, (3) a help module, and/or (4) a status module.

In addition to the components identified above, this fifth illustrative embodiment comprises memory, at least one database stored in memory, and at least one database processor capable of processing data contained in said database. Additional components

may include:

means for said plurality of network nodes to transmit a response to said request.

means for processing said response from said plurality of network nodes to said request;

means for storing said response from said plurality of network nodes to said request;

means for constructing a response log, wherein said response log comprises a plurality of responses from said plurality of network nodes to said request;

means for administering said response log; and

means for printing said response log.

Further, in all of the illustrative embodiments above, the nodes (e.g., destination nodes, network nodes, nodes, etc.) may comprise one or more of the following:

a plurality of delivery system nodes;

a plurality of secondary system nodes;

automated teller machines;

bank servers;

communication servers; and

financial servers.

Finally, in these illustrative embodiments, the communications network may be a financial institution's communications network, such as a bank's communication network.

Further details on these embodiments, other possible embodiments, and the methods and systems of the present invention are set forth below.

As will be appreciated by those of ordinary skill in the art, the methods and systems of the present invention have wide utility in a number of areas as illustrated by the wide variety of features and advantages discussed below.

It is a feature and advantage of the present invention to provide an automated selection, retrieval, storage, and management methods and systems which is generic and platform-independent and can be used, for example, with ATMs, financial institution servers, and almost any network node device.

It is another feature and advantage of the present invention to provide automated information retrieval methods and systems which can be configured to select, retrieve, store, compare, and report various types of files for nodes that have missed days of data and that have other missing data.

It is another feature and advantage of the present invention to provide automated information retrieval methods and systems which can be configured to prioritize the selection, retrieval, storage, and management of various types of files, including files for nodes that have missed days or that have other missing data.

It is another feature and advantage of the present invention to identify data that is present on a network node device prior to its entry into the retrieval system.

It is another feature and advantage of the present invention to provide flexible configurable operation parameters.

It is another feature and advantage of the present invention to provide automated information retrieval methods and systems that can be configured to retrieve various types of files, with each type of file having, for example, its own frequency of upload, upload schedule, and destination directory.

It is another feature and advantage of the present invention to provide real-time configuration of data retrieval and real-time review of all data, including transaction logs.

It is another feature and advantage of the present invention to automatically retrieve files from a network node device based on a scheduling configuration.

It is another feature and advantage of the present invention to provide scheduling configuration based on: (1) a single selected day for a retrieval period; (2) number of days in retrieval period; and/or (3) hours and/or days of the week in a retrieval period.

It is another feature and advantage of the present invention to automatically retrieve files from a network node device based on a node identification configuration.

It is another feature and advantage of the present invention to automatically retrieve files from a network node device using an exception-based (i.e., error-based) configuration.

It is another feature and advantage of the present invention to provide detailed node configuration based on: (1) missed days in a retrieval period; and/or (2) nodes that were disconnected, down, reported an exception, and the like.

It is another feature and advantage of the present invention to provide data filtering.

It is another feature and advantage of the present invention to allow for node

filtering based on one or more selected nodes, nodes affiliated with a particular business, and/or nodes affiliated with a particular business branch (i.e., segments or offices within a business).

It is another feature and advantage of the present invention to provide an opportunity for centralized information processing.

It is another feature and advantage of the present invention to provide detailed logging (e.g., detailed exception-based logging) at the network management system server.

It is another feature and advantage of the present invention to employ data compression to minimize transfer times.

It is another feature and advantage of the present invention to provide for unattended operation.

It is another feature and advantage of the present invention to provide security and entitlement features.

It is another feature and advantage of the present invention to secure the executable code running on the network management system server.

It is another feature and advantage of the present invention to provide for multiple levels of user access (e.g., an administrator level and an operator level) and to facilitate multiple levels of security related to those levels of user access.

It is another feature and advantage of the present invention to provide network systems functionality to the administrator to ensure timely customer service response and compliance with various legal requirements.

It is another feature and advantage of the present invention to be transport independent.

It is another feature and advantage of the present invention to provide a flexible automated information retrieval system that is capable of accommodating changes in the system architecture.

It is another feature and advantage of the present invention to support new file types to be retrieved.

It is another feature and advantage of the present invention to make it easier for financial institutions to accommodate growth in the number of network nodes.

It is another feature and advantage of the present invention to support new node devices as they are added to and entered into the network.

It is another feature and advantage of the present invention to perform multiple simultaneous uploads for multiple file types in a network of thousands of managed network nodes.

It is another feature and advantage of the present invention to provide automated information retrieval system that is capable of running on many different hardware platforms and with many different operating systems.

It is another feature and advantage of the present invention to interface and communicate with the network communications system through a variety of electronic mediums, including wireline and wireless technology, such as, for example, WAN, LAN, satellite system, telephone lines, and the like.

It is another feature and advantage of the present invention to provide real-time

status.

It is another feature and advantage of the present invention to provide real-time batch status.

It is another feature and advantage of the present invention to provide extensive exception handling and fail-over facilities.

It is another feature and advantage of the present invention to utilize state-of-the-art technology and minimize impact on the embedded code running inside the node resources and to utilize the communications network to reach the nodes instead of specialized lines in a reliable and efficient manner.

It is another feature and advantage of the present invention to provide automated methods and systems for selecting, retrieving, storing, and managing data from network nodes, thereby, reducing manpower and coordination efforts.

It is another feature and advantage of the present invention to provide labor savings by eliminating the need for a person to visit the site of a network node device to extract, download, and store transaction logs and other data.

It is another feature and advantage of the present invention to eliminate interruptions of network node devices.

It is another feature and advantage of the present invention to significantly reduce the time required by the overall node management process (i.e., the time it takes to select, retrieve, store, and manage data on network nodes).

It is another feature and advantage of the present invention to minimize the amount of paper work generated by: (1) selecting, retrieving, storing, and managing data;

(2) configuring data retrieval commands; and/or (3) tracking data.

It is another feature and advantage of the present invention to provide automated information retrieval system for a financial institution's communications network.

It is another feature and advantage of the present invention to provide on-line system help to a user.

It is another feature and advantage of the present invention to allow a user to store data on a local computer or local network.

It is another feature and advantage of the present invention to provide detailed reporting.

It is another feature and advantage of the present invention to have one standardized user interface regardless of a user's computer system (i.e., the hardware, operating system, and/or other software).

It is another feature and advantage of the present invention to provide for the use of similar user modules when one or more users and/or one or more financial institutions are discussing a network node device, file type, and/or other parameters.

These advantages and features may be accomplished singularly, or in combination, in one or more of the embodiments of the present invention.

Additional uses, objects, advantages, and novel features of the invention will be set forth in the detailed description that follows and will become more apparent to those skilled in the art upon examination of the following or upon learning by practice of the invention.

BRIEF DESCRIPTION OF THE FIGURES

Other objects and advantages of the invention will be more clearly understood by reference to the following description taken in connection with the accompanying figures, in which:

Figure 1 illustrates an overview of the network topology in an embodiment of the methods and systems for automatically retrieving information from network nodes.

Figure 2 illustrates a client-server overview in an embodiment of the methods and systems for automatically retrieving information from network nodes.

Figure 3 illustrates a overview of the GUI in an embodiment of the methods and systems for automatically retrieving information from network nodes.

Figure 4 illustrates an "Administrator - Status" Module that an administrator views, inputs, selects, and/or transmits status information in an embodiment of the methods and systems for automatically retrieving information from network nodes.

Figure 5 illustrates an "Administrator - Global Configuration" Module that an administrator views, inputs, selects, and/or transmits configuration information in an embodiment of the methods and systems for automatically retrieving information from network nodes.

Figure 6 illustrates an "Administrator - Retrievable File Type" Module that an administrator views, inputs, selects, and/or transmits retrievable file type information in an embodiment of the methods and systems for automatically retrieving information from network nodes.

Figure 7 illustrates an "Operator - Global Configuration" Module that an operator views, inputs, selects, and/or transmits configuration information in an embodiment of the methods and systems for automatically retrieving information from network nodes.

Figure 8 illustrates an "Operator - Retrievable File Type" Module that an operator views, inputs, selects, and/or transmits retrievable file type information in an embodiment of the methods and systems for automatically retrieving information from network nodes.

Figure 9 illustrates a "User's Guide" Module that provides an on-line user's guide and help mechanism in an embodiment of the methods and systems for automatically retrieving information from network nodes.

DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

Referring now in detail to an embodiment of the present invention, the methods and systems for automated information retrieval is designed to retrieve any kind of data or files, and not simply, transaction and/or management information systems (MIS) logs. The automated system for an embodiment of the present invention recognizes and retrieves data that has not yet been centrally collected and archived. The system employs compression to minimize transfer times and is configurable in operational parameters.

The methods and systems in an embodiment of the present invention provides back-up solutions in addition to retrieval of information. Features of the system of the present invention include, for example, a level of automation employing intelligence in portability and in prioritizing data retrieval for nodes with exceptions, failed retrieval attempts, down-time, and the like. The system of the present invention provides

automated retrieval of various types of files or other records from managed network nodes. Further, the system can be configured to retrieve several types of files, with each type having, for example, its own frequency of upload, upload schedule, and destination directory.

The system automatically collects data of interest around the network on a priority basis, such as, data that is missed due to communication downtime or other conditions and catches up later per a schedule which is part of the system. The system of the present invention is highly configurable with regard, for example, to the number of days in the retrieval period, to the hours and days of the week during which information is retrieved, and to selecting certain nodes for data retrieval. For example, the system can be configured to retrieve information only at night or to retrieve information only from certain network nodes which are of interest.

An embodiment of the present invention provides, for example, detailed logging (e.g., exception-based logging data) at the network management system server. The data collected by the system is accessible to users through various means. The system can also be used, for example, to provide a user another application, such as, retrieving security violations or occurrences of security violations from certain ATMs or other nodes and identifying and displaying them to administrators. The user can tailor the kind of search the user wishes to make to a certain extent. The system for an embodiment of the present invention is extendible, such that it can be configured on the network management system server side with minimal effort to retrieve all sorts of information. With regard to searching, utilities are deployed and reside on the remote nodes, and those utilities are

programmed for a particular task. For example, utilities are provided for retrieving information, such as, security violations.

In an embodiment of the present invention, detailed exception-based logging is provided at the network management system server. The system provides entitlement awareness for multiple levels of access, such as, for example, an administrator or an operator level.

The system of the present invention supports, for example, data compression, filtering, encryption, and other security features. The system provides up-to-the minute status displays, and different views are available through column sorting. Batch status reports are available, and the system supports entry of new node types into the network, as well as new filter types to be required.

The present invention will now be described in more detail by illustrative examples with reference to the embodiment(s) depicted in the Figures. The following described embodiment(s) is presented by way of example and should not be construed as limiting the inventive concept to any particular configuration.

Referring to Figure 1, a basic overview of the network topology according to an embodiment of the present invention is depicted. As shown in Figure 1, the network management system server **1** is coupled to a plurality of network node device **3a-3f**, **4a**, and **4b** via a network **2** using X.25 or Transmission Control Protocol/Internet Protocol (TCP/IP). X.25 and TCP/IP are basic communication languages or protocols used by world wide communications networks, such as, the Internet. X.25 and TCP/IP can also be used as a communications protocol in the private networks called intranets and in

extranets.

The automated information retrieval system includes at least one client terminal **5a**, **5b**. The client terminal **5a**, **5b** typically includes a central processing unit (CPU), a monitor or other visual display device, a keyboard or some other input device, and a communications device, such as a modem. Further, each client terminal **5a**, **5b** is electronically connected to at least one network **2**.

In an embodiment of the present invention, the client terminal **5a**, **5b** may be any PC running a Windows operating system or may be a Windows NT workstation with access to a global communications network, such as, the Internet. For example, the client terminal **5a**, **5b** may be a PC that supports X-based Windows as a display platform. Alternatively, it should be appreciated that the client terminal **5a**, **5b** could take on a variety of other suitable forms, such as, for example, PC's and/or servers running UNIX or LINUX, a Macintosh, or a pen-based computer. Furthermore, the client terminal **5a**, **5b** could be electronically connected to a network management system server **1** by way of other wireline or wireless technology, including, for example, WAN, LAN, satellite system, telephone lines, and the like.

ATMs **3a-3f** transmit and receive data to and from a network management system server **1** via a network **2**. Delivery system servers **4a-4b** also transmit and receive data from the network management system server **1** via the network **2**. Client terminals **5a-5b** interact with the network management system server **1** in a typical client/server platform.

The operation of the system according to the embodiment shown in Figure 1 is as follows. ATM **3a** has transaction log information. For example, transaction log

information may include a balance inquiry, withdrawal, or deposit by a customer to his or her checking account. As the transaction is processed at ATM **3a**, a record of the transaction is locally logged and stored at ATM **3a**, and then transmitted to the network management system server **1** via the network **2**. The network management system server **1** selects, retrieves, and stores transaction record information and other data to the network **2**.

A user at a client terminal **5a**, **5b** enters the system and can (1) observe the retrieval and storage of transaction record information and other data; (2) control system configuration (i.e., rules governing selection, retrieval, storage, or management of data); and/or (3) correct system problems. The user can control system configuration based on the file type, network node device, by business branch, and/or status. Additionally, network node device data may be selected based on one or more of the following: (1) a single selected day for a retrieval period; (2) number of days in retrieval period; (3) hours and/or days of the week in a retrieval period; (4) selected network nodes to retrieve data; (5) missed days in a retrieval period; and/or (6) nodes that were disconnected, down, reported an exception, and the like.

In an embodiment of the present invention, a node configuration data tool is used to build and design new nodes to be added to the system. In this manner, the network management system server **1** and its corresponding client terminals **5a-5b**, may accept and process new network node devices.

In an embodiment of the present invention, not all users are permitted to access the same system capabilities. Every user of the network management system server **1** must

go through a security check. Users of the network management system server **1** are organized into a security hierarchy. For example, an administrative user (i.e., an Administrator) is permitted to access more sensitive system functions and configuration commands (e.g., adding another type of node or collecting another type of record or files) than an operative user (i.e., an Operator).

A feature of the present invention is the use of universal code, such that the network management system server **1** can interface with a variety of multiple client terminals **5a, 5b** to project GUIs and the service application. Furthermore, the service application enables the network management system server **1** to access the network node devices **3a-3f**, **4a**, and **4b** regardless of the platform of the client terminal **5a**, **5b**.

In another possible embodiment, the implementation of the present invention may use a JAVA applet, which may be accessed over a world wide communications network, such as, for example, the Internet or an Intranet. As will be appreciated by those skilled in the art, the JAVA language developed by Sun Microsystems of Palo Alto, California, is an example of a language that can be run on a plurality of machines regardless of the platform of the machine. Thus, in one possible embodiment of the present invention, only a JAVA application is required for a user to interact with the automated information retrieval system. Similarly, web-based technology (e.g., web browser and web servers) could be used to provide user interaction with the automated information retrieval system.

Referring now to Figure 2, entitled "*Daemon Components of the Automated Information Retrieval System*," and Figure 3, entitled "*GUI Architecture of the Automated Information Retrieval System*," the internal software architecture of the present invention

is illustrated. Many of the boxes represent object classes that are implemented in the JAVA programming language. Figure 2 illustrates the daemon process that is always running on the network management system server. Figure 3 illustrates the GUI that is brought up and down on demand. The present invention is a distributed application wherein a "client" portion **252** runs on any machine with network accessibility to the corresponding "server," **202** herein referred to as the network management system server.

Figure 2 illustrates the server components **202** and client components **252** of the distributed software application of the present invention. ACID **204** is the controlling component for the entire application. It creates the other application components and delegates responsibilities to them in order to accomplish work. It is the conduit through which the "Cron" component **206** interfaces to the rest of the application.

Cron **206** performs the task of scheduling and managing the components responsible for the file transfer from network nodes to the server for a specific type of file. There can be many instances of this component. Each is self-contained, operates against a single node, and is independent of the others. Each manages a single Extraction script **208**.

Extraction script **208** executes a file extraction script to extract the desired data from the remote node and puts it into execution. In the network management system environment, it interacts with the LCserver process **210** (a UNIX-based process that performs remote command execution and remote file transfer). The extraction script **208** being executed indicates which client-based Extractor **254, 256, 258** to execute, what

characteristics of the data to be extracted are, and where in the server file system that the LCserver process **210** is to place the uploaded data once it has been retrieved.

Extractor **254, 256, 258** is a client side component that has specific knowledge of the characteristics of the data that is to be extracted and retrieved. It locates the data, extracts the portion which matches the characteristics specified, and informs the extraction script of the location from which to retrieve the extraction. There can be multiple extractors on a client. Each one would be responsible for extracting data from a different type of data source.

Debug **212** is a development aid for diagnostics and troubleshooting. It is the channel through which the debug information will be displayed.

GUIProxy **214** is responsible for interfacing the GUI component **216** to the rest of the application. It channels communications between the ACIDProxy component of the GUI **216** and the ACID component **204**.

ACIDState **218** is the component that is responsible for the bookkeeping as it pertains to which nodes need retrievals and what type of files are to be retrieved. After each Cron component **206** completes a retrieval (successfully or not), the ACIDState component **218** is notified of that status and information pertaining to the node that is updated. Whenever an update occurs, the updated information is immediately written to a property file **220**. This preserves the state of the file **232** in the event of a server failure.

BranchProxy **222** is responsible for the configuration of the application as it pertains to the nodes of the network from which retrievals will be performed. Over time, as new nodes are added to the network and others are dropped, BranchProxy **222**

recognizes this and reconciles this information so that the application is always operating against the proper set of nodes. Node configuration information is supplied to BranchProxy **222** by the BranchStore service **224**.

Security **226** is responsible for validating the access credentials of any user trying to access the application through the GUI. It verifies that the user is entitled to use the system and also determines what level of GUI entitlement the user has (i.e., either an operator or an administrator). In the network management system environment, this is accomplished by checking against the TS.in (Terminal Security) file **228**. TS.in file **228** contains the complete list of valid network management system users and their entitlements for each of the network subsystems.

Audit **230** is responsible for adding entries to an audit log. The audit log records all significant events that occur during the operation of the application, including events that are user generated and that are system generated.

In an embodiment of the present invention, the AIRS daemon communicates with network nodes (e.g., NT ATMs, etc.) using the LCserver **210** on the network management system server. The LCserver **210** communicates with managed network nodes using TTM over TCP/IP. The AIRS daemon communicates with the AIRS GUI **216** and BranchStore **224** using Remote Method Invocation (RMI). The AIRS daemon is completely independent of the underlying transport, and it is possible to enable file transfers over HTTP or any other file transfer protocol.

Figure 3 illustrates the GUI Architecture of the automated information retrieval system **302**. AIRS GUI Dispatcher **304** is the controlling component of the GUI. It

creates the other support components for the GUI and delegates responsibilities to them in order to accomplish work.

ACIDProxy **306** is responsible for interfacing to the AIRS daemon. It channels communications between the AIRS GUI Dispatcher **304** and the GUIProxy **308** component that is part of the daemon component set.

UserNotifier **310** is responsible for displaying exception-based conditions to the user. Whenever a condition occurs that warrants notifying the user that an exception occurred, the UserNotifier **310** component performs that task and then returns the screen to the previous state.

MediaStore **312** is responsible for managing graphical images (gif files) **314** on the GUI. These gif files **314** are in Compuserve gif format and reside on the local file system **316**.

AdminScreen **318** is responsible for gathering and displaying the information that composes the AIRS Administration Module. It contains the business logic required to properly manage the screen.

StatusScreen **320** is responsible for gathering and displaying the information that composes the AIRS Status Module. It contains the business logic required to properly manage the module.

DocScreen **322** is responsible for displaying the on-line user documentation that is supplied with the present invention. There are a number of HTML format files **324** that comprise the documentation set.

In an another embodiment of the present invention, configuration information and

the current state of retrievals from the network are maintained in human-readable ASCII property files, which can be edited by hand in case of unexpected crashed or inability to bring up the above-mentioned GUI front-end application.

Turning now to the illustrative user modules depicted in Figures 4-9, these user modules represent screen shots that display and prompt the user to view, input, select, and/or transmit information. For example, some of the information that the user modules display may include status of the network node devices, types of files and other data, missing files or missing data, devices that have fallen behind, and/or exceptions. The user modules may be advantageously displayed as an interactive GUI and service application projected upon a client terminal running X Windows coupled with a network management system server connected to a network.

Figure 4 depicts an embodiment of the "Status" Module illustrating the retrieval status for the specific file type. The Status Module is displayed after initialization of the distributed software application of the present invention and serves as the home module of the AIRS GUI. The retrieval status is refreshed periodically based on the configuration value in the Refresh Period parameter on the Global Configuration Parameters Tab of the Administration Screen. A user can also force an immediate status refresh by clicking on the Refresh Now button at the bottom of the screen.

Detailed descriptions of each GUI components of the Status parameters are described in Table 1 below.

Table 1: Status Parameters

File Type Combo Box	This combo box contains the list of configured file types. A user can view the retrieval status for all the eligible nodes of a selected file type. A user will not be able to see the nodes that do not have a Remote Extractor Path name defined in the Retrievable File Type Parameters Tab of the Administration Module.
Status Table	This table contains the retrieval status for all eligible nodes of a selected file type. The retrieval status is acquired from the NetworkStatus object that is provided by ACIDProxy. A user can also enable or disable retrievals for a specific node or a selection of nodes. To do so, select the node(s) from the Status Table, then click on the Enable button or Disable button. To clear all selections, click on Clear Selection button.
Enable Button	This button will be enabled only if there are nodes selected in the Status Table. If the Enable button is clicked, the button handler retrieves the selected nodes from the Status Table. Then it creates the EnableCommand and invokes method in the ACIDProxy object to update the property file(s) so that the scheduler will attempt to retrieve files/logs for these nodes.
Disable Button	This button will be enabled only if there are nodes selected in the Status Table. If the Disable Button is clicked, the button handler retrieves the selected nodes from the Status Table. Then it creates the EnableCommand object and invokes method in the ACIDProxy object to update the property file(s) so that the scheduler will NOT attempt to retrieve files/logs for these nodes.
Refresh Now Button	Click on this button to force an immediate status refresh to update the status table.
Clear Selections Button	Click on this button to clear all node selections in the Status table.
Report Button	If the Report button is clicked, the button handler invokes method in ACIDProxy to dump the current retrieve status data structure for the selected file type in a readable format in a specified directory on the network management system server.
Status Table Row Height Gage	Adjust the row height in the status table.

In an embodiment of the present invention, the log retrieval results are represented as follows:

- If retrieval has never been attempted for the specific nodes, the background color of the rows will be painted in light gray.
- If retrieval has succeeded for the specific nodes, the background color of the rows will be painted in white.
- If retrieval happened too early and the data was not available at the time for the specific nodes, the background color of the rows will be painted in yellow.
- If the date is out of range at the time of the retrieval for the specific nodes, the background color of the rows will be painted in orange.
- If retrieval has failed for the specific nodes, the background color of the rows will be painted in red.
- If the system is in the process of retrieving files/logs, the background color of the rows will be painted in green.

Figure 5, entitled, "Administration Module - Global Configuration Parameters Tab" illustrates an embodiment of an administrative module that enables an administrator to configure the global settings for the daemon and the user interface of the present invention. When an administrator finishes modifying the global parameters, he or she clicks on the "Apply" icon to set the global parameters.

Detailed descriptions of each GUI component on the Global Configuration Parameters are described in Table 2 below.

Table 2: Global Configuration Parameters

Enable AIRS Check Box	This allows a user to enable (select) or disable (not select) the AIRS Check Box only if a user has Administrative entitlements. The initial state is acquired from the AdminConfig object that is provided by the ACIDProxy.
Log File Size	This allows a user to configure the file size for the AIRS detail logs only if a user has Administrative entitlements. A valid value is a range from 1 megabyte to 100 megabytes. The initial value is acquired from the AdminConfig object that is provided by the ACIDProxy.
Minimum Retry Time After Retrieval Failure Combo Box	This allows a user to configure the minimum retry time after retrieval failure in hours only if a user has Administrative entitlements. A valid value is a range from 1 to 24 hours. The minimum retrieval retry between hours is acquired from the AdminConfig object that is provided by the ACIDProxy.
Maximum Number of Simultaneous Retrievals Combo Box	This allows a user to configure the maximum number of simultaneous retrievals for the distributed software application of the present invention. A valid value is a range from 1 to "N" where "N" is the maximum possible number of simultaneous retrievals. The maximum number of and possible number of simultaneous retrievals are acquired from the AdminConfig object that is provided by the ACIDProxy.
Enable Tool Tips Check Box	This allows a user to enable (select) or disable (not select) the Tool Tips for all GUI buttons. The initial state is acquired from the AdminConfig object that is provided by the ACIDProxy.
Refresh Period Combo Box	This allows a user to configure the refresh time for the retrieval status on the Status Module. The valid values are 5 seconds, 15 seconds, 30 seconds, 45 seconds, 1 minute, and increments in units of 1 minute afterwards up to 60 minutes. The initial value is acquired from the AdminConfig object that is provided by the ACIDProxy.
Apply Button	If the Apply button is clicked, the button handler retrieves data from all the GUI components on this tab and updates the AdminConfig object using the appropriate set methods. Then it invokes method in the ACIDProxy object to update the property file.
Reset Button	If the Reset button is clicked, the button handler resets the GUI components to present the parameter settings since last Apply.

Figure 6, entitled "Administration Module - Retrievable File Type Parameters

Tab" illustrates an embodiment of an administrative module that enables an administrator to configure the parameters for each retrievable file type. These parameters are used by the AIRS daemon to determine whether or not to retrieve files/logs from the network nodes. If a user has Administrative entitlements, a user can define a new file type by selecting "New" from the File Type Combo Box. If a user chooses to do so, a user must enter the file type name and specify the retrieval constraints for the new file type. When a user finishes specifying all the retrieval constraints or making modifications, the user clicks on Apply.

Detailed descriptions of each GUI component on the Retrieval File Type Parameters are described in Table 3 below.

Table 3: Retrieval File Type Parameters

File Type Combo Box	This combo box contains the list of configured file types. A user can select an existing file type for modifications. If user has Administrator entitlements, the user can modify the archive director, extractor pathnames for the remote nodes of the existing file types, and configure a new file type.
File Type Name Text Field	This is the name of the file type. Normally, this is a read-only field. If a user has Administrator entitlements and selects the "New" icon from the File Type Combo Box, this field will be empty. A user must enter a new file type name.
Retrieve Once Every "N" Day(s) Combo Box	This is the files/logs retrieval frequency in days. A valid value is a range from 1 to 31 days. The initial setting is acquired from the selected FileType object that is provided by the ACIDProxy. If the file type is new, the initial setting is set to 1.
Archive Directory Text Field	The archive directory is the top-level directory for storing the retrieved files/logs on the network management system server. If a user has Administrator entitlements, he or she can modify this field. This archive directory is empty if the file type is new. Otherwise, the archive directory is acquired from the selected FileType object that is provided by the ACIDProxy.
Enable File Type	This allows a user to enable (select) or disable (not select)

Retrieval Check Box	retrieval of files/logs for the selected file type. This field is not selected if the file type is new. Otherwise, the initial setting is acquired from the selected FileType object that is provided by the ACIDProxy.
Initial Catch Up Days Combo Box	This allows a user to configure the initial files/logs retrieval catch up days for the present invention if a user has Administrator entitlements. A valid value is a range from 0 to 31 days. The initial files/logs retrieval catch up days value is acquired from the FileType object that is provided by the ACIDProxy. If the file type is new, the initial setting is set to 0.
Allowable Hours Check Box Table	This allows a user to configure the allowable hours for the files/logs retrieval for the selected file type. The scheduler will attempt to retrieve files/logs based on the constraints specified in this table. All the check boxes in this table are not selected if the file type is new. Otherwise, the initial settings are retrieved from the selected FileType object that is provided by the ACIDProxy.
Remote Node Text Fields (For example: NTC, TCS, etc.) - Remote Extractor Pathname	The number of Remote Extractor Pathname text fields is based on the number of existing node types defined in the branch file on the INC. The names of the node types are used as the labels for each Remote Extractor Pathname text fields. If a user enters the pathname for the specified remote node, the distributed software application of the present invention will attempt to retrieve files/logs from all the remote nodes that have the same target name. If the pathname field is empty, the present invention will not attempt to retrieve logs/files from this type of network node.
Apply Button	If the Apply button is clicked, the button handler retrieves data from all the GUI components on this tab and updates the AdminConfig object using the appropriate set methods. Then it invokes the set method in the ACIDProxy object to update the property file.
Reset Button	If the Reset button is clicked, the button handler resets the GUI components to present the parameter settings since last Apply.

Figure 7 illustrates an "Operator - Global Configuration" Module that illustrates an embodiment of an operator module that enables an operator to configure the global settings for the daemon and the user interface of the present invention. This module is

similar to the "Administration Module - Global Configuration Parameters Tab," except that some of the configuration options are not available to the operator. Detailed descriptions of each GUI component on the Global Configuration Parameters are described in Table 2.

Figure 8 illustrates an "Operator - Retrievable File Type" Module illustrates an embodiment of an operator module that enables an operator to configure the parameters for each retrievable file type. This module is similar to the "Administration Module - Retrievable File Type Parameters Tab" except that some of the configuration options may not be available. Detailed descriptions of each GUI component on the Retrievable File Type Parameters are described in Table 3.

Figure 9 illustrates a "User's Guide" Module that provides an on-line user's guide and help mechanism in an embodiment of the methods and systems for automatically retrieving information from network nodes.

The foregoing description and associated figures detail only illustrative examples of the environment in which the invention can be used and are not intended to be limiting. For instance, the user modules shown in Figures 4-9 are by way of example only. In addition, attributes can be constantly updated and additional fields can be added by authorized users and/or authorized businesses (e.g., financial institutions). Furthermore, the programming languages, software platforms, operating systems, hardware components, and other technology mentioned in the foregoing description are by way of example only, and the present invention may always be enhanced to incorporate the most advanced available technology. Variations and modifications of the present invention

will be apparent to one skilled in the art, and the above disclosure is intended to cover all such modifications and equivalents.

GLOSSARY OF ABBREVIATIONS

This disclosure, including illustrative information used to populate user modules in the figures, makes use of certain abbreviations which have the following meanings:

AIRS	Automated Information Retrieval System
ASCII	American Standard Code for Information Interchange
ATM	Automated Teller Machine
CPU	Central Processing Unit
GUI	Graphical User Interface
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol
INC	Integrated Network Controller
LAN	Local Area Network
LCserver	Local Control Server
RMI	Remote Method Invocation
TCP/IP	Transmission Control Protocol/Internet Protocol
WAN	Wide Area Network

What is claimed is:

1. A platform-independent method for retrieving and managing data in at least one communications network having a plurality of destination nodes interconnected with communication lines, comprising:

remotely accessing a communications network;

remotely configuring a retrieval command associated with a destination node;

remotely transmitting said retrieval command to said destination node;

remotely monitoring said retrieval command associated with said destination node;

remotely transmitting a response from said destination node to said retrieval command;

remotely monitoring said response from said destination node to said retrieval command; and

remotely storing said response from said destination node to said retrieval command.

2. The method of claim 1, further comprising:

remotely prioritizing said retrieval command associated with said destination node; and

remotely prioritizing said response from said destination node to said retrieval command.

3. The method of claim 1, wherein said monitoring of said response further

comprises a retrieval status.

4. The method of claim 3, wherein said retrieval status comprises at least one of the following parameters:

never attempted;

successful;

not available;

date out of range;

failed; and

in progress.

5. The method of claim 1, further comprising:

remotely executing an automated retrieval schedule.

6. The method of claim 5, wherein said automated retrieval schedule comprises at least one of the following parameters:

an upload frequency;

an upload schedule; and

a destination directory.

7. The method of claim 1, further comprising:

remotely constructing a response log;

remotely administering said response log; and

remotely printing said response log.

8. The method of claim 1, wherein said configuration of said retrieval command comprises at least one of the following parameters:

minimum time to retry if retrieval failure; and

maximum number of simultaneous retrievals.

9. The method of claim 8, wherein said configuration of said retrieval command further comprises node filtering.

10. The method of claim 9, wherein said node filtering comprises at least one of the following parameters:

one or more of said destination nodes designated by a user;

one or more of said destination nodes affiliated with a particular business; and

one or more of said destination nodes affiliated with a particular business branch.

11. The method of claim 8, wherein said configuration of said retrieval command further comprises identification of at least one of said destination nodes categorized by at least one of the following parameters:

at least one selected day;

at least one selected hour;

at least one selected said destination node;

at least one missed day;

at least one missed hour;

at least one disconnected destination node;

at least one down destination node; and

at least one exception-reported destination node.

12. The method of claim 11, wherein said configuration of said retrieval command further comprises identification of at least one of said destination nodes categorized by at least one of the following parameters:

file type;

file type name; and

archive directory.

13. The method of claim 1, wherein said destination node further comprises a plurality of delivery system nodes.

14. The method of claim 1, wherein said destination node further comprise a plurality of secondary system nodes.

15. The method of claim 1, wherein said destination node is an automated teller machine.

16. The method of claim 1, wherein said destination node is a bank server.

17. The method of claim 1, wherein said destination node is a communication server.

18. The method of claim 1, wherein said destination node is a financial server.

19. The method of claim 1, wherein said communications network is a financial institution's communications network.

20. The method of claim 1, further comprising:

remotely providing a help mechanism to a user.

21. A platform-independent system for retrieving and managing data in at least one communications network having a plurality of destination nodes interconnected with communication lines, comprising:

means for remotely accessing a communications network;

means for remotely configuring a retrieval command associated with a destination node;

means for remotely transmitting said retrieval command to said destination node;

means for remotely monitoring said retrieval command associated with said destination node;

means for remotely transmitting a response from said destination node to said retrieval command;

means for remotely monitoring said response from said destination node to said retrieval command; and

means for remotely storing said response from said destination node to said retrieval command.

22. The system of claim 21, further comprising:

means for remotely prioritizing said retrieval command associated with said destination node; and

means for remotely prioritizing said response from said destination node to said retrieval command.

23. The system of claim 21, wherein said monitoring of said response further comprises a retrieval status.

24. The system of claim 23, wherein said retrieval status comprises at least one of the following parameters:

never attempted;

successful;

not available;

date out of range;

failed; and

in progress.

25. The system of claim 21, further comprising:

means for remotely executing an automated retrieval schedule.

26. The system of claim 25, wherein said automated retrieval schedule comprises at least one of the following parameters:

an upload frequency;

an upload schedule; and

a destination directory.

27. The system of claim 21, further comprising:

means for remotely constructing a response log;

means for remotely administering said response log; and

means for remotely printing said response log.

28. The system of claim 21, wherein said configuration of said retrieval command comprises at least one of the following parameters:

minimum time to retry if retrieval failure; and

maximum number of simultaneous retrievals.

29. The system of claim 8, wherein said configuration of said retrieval command

further comprises node filtering.

30. The system of claim 29, wherein said node filtering comprises at least one of the following parameters:

one or more of said destination nodes designated by a user;

one or more of said destination nodes affiliated with a particular business; and

one or more of said destination nodes affiliated with a particular business branch.

31. The system of claim 28, wherein said configuration of said retrieval command further comprises identification of at least one of said destination nodes categorized by at least one of the following parameters:

at least one selected day;

at least one selected hour;

at least one selected said destination node;

at least one missed day;

at least one missed hour;

at least one disconnected destination node;

at least one down destination node; and

at least one exception-reported destination node.

32. The system of claim 21, wherein said configuration of said retrieval command further comprises identification of at least one of said destination nodes categorized by at least one of the following parameters:

file type;

file type name; and

archive directory.

33. The system of claim 21, wherein said destination node further comprises a plurality of delivery system nodes.

34. The system of claim 21, wherein said destination node further comprise a plurality of secondary system nodes.

35. The system of claim 21, wherein said destination node is an automated teller machine.

36. The system of claim 21, wherein said destination node is a bank server.

37. The system of claim 21, wherein said destination node is a communication server.

38. The system of claim 21, wherein said destination node is a financial server.

39. The system of claim 21, wherein said communications network is a financial institution's communications network.

40. The system of claim 21, further comprising:

means for remotely providing a help mechanism to a user.

41. A method for selecting, prioritizing, retrieving, storing, and managing data within network nodes, comprising:

configuring a request from a user to a network node;

transmitting said request to said network node;

processing said request associated with said network node;

transmitting a response from said network node to said request;

processing said response from said network node to said request; and

storing said response from said network node to said request.

42. The method of claim 41, further comprising:

constructing a response log;

administering said response log; and

printing said response log.

43. The method of claim 41, further comprising:

prioritizing said request associated with said network node; and

prioritizing said response from said network node to said request.

44. The method of claim 41, further comprising:

constructing an automated retrieval schedule; and

executing said automated retrieval schedule.

45. The method of claim 44, wherein said automated retrieval schedule comprises at least one of the following parameters:

an upload frequency;

an upload schedule; and

a destination directory.

46. The method of claim 41, wherein said configuration of said request comprises at least one of the following parameters:

minimum time to retry if retrieval failure; and

maximum number of simultaneous retrievals.

47. The method of claim 46, wherein said configuration of said request further

comprises node filtering.

48. The method of claim 47, wherein said node filtering further comprises at least one of the following parameters:

one or more of said network nodes designated by a user;

one or more of said network nodes affiliated with a particular business; and

one or more of said network nodes affiliated with a particular business branch.

49. The method of claim 46, wherein said configuration of said request further comprises identification of at least one of said network nodes categorized by at least one of the following parameters:

at least one selected day;

at least one selected hour;

at least one selected said network node;

at least one missed day;

at least one missed hour;

at least one disconnected network node;

at least one down network node; and

at least one exception-reported network node.

50. The method of claim 46, wherein said configuration of said request further comprises identification of at least one of said network nodes categorized by at least one of the following parameters:

file type;

file type name; and

archive directory.

51. The method of claim 41, further comprising:

managing said response associated with said network node.

52. The method of claim 41, wherein said network node comprises a plurality of delivery system nodes.

53. The method of claim 41, wherein said network node comprises a plurality of secondary system nodes.

54. The method of claim 41, wherein said network node is an automated teller machine.

55. The method of claim 41, wherein said network node is a bank server.

56. The method of claim 41, wherein said network node is a communication server.

57. The method of claim 41, wherein said network node is a financial server.

58. The method of claim 41, wherein said network nodes comprise a financial institution's network nodes.

59. The method of claim 41, further comprising:

providing a help mechanism to a user.

60. A system for selecting, prioritizing, retrieving, storing, and managing data within network nodes, comprising:

means for configuring a request from a user to a network node;

means for transmitting said request to said network node;

means for processing said request associated with said network node;

means for transmitting a response from said network node to said request;

means for processing said response from said network node to said request; and

means for storing said response from said network node to said request.

61. The system of claim 60, further comprising:

means for constructing a response log;

means for administering said response log; and

means for printing said response log.

62. The system of claim 60, further comprising:

means for prioritizing said request associated with said network node; and

means for prioritizing said response from said network node to said request.

63. The system of claim 60, further comprising:

means for constructing an automated retrieval schedule; and

means for executing said automated retrieval schedule.

64. The system of claim 63, wherein said automated retrieval schedule comprises at least one of the following parameters:

an upload frequency;

an upload schedule; and

a destination directory.

65. The system of claim 60, wherein said configuration of said request comprises at least one of the following parameters:

minimum time to retry if retrieval failure; and

maximum number of simultaneous retrievals.

66. The system of claim 65, wherein said configuration of said request further comprises node filtering.

67. The system of claim 66, wherein said node filtering further comprises at least one of the following parameters:

one or more of said network nodes designated by a user;

one or more of said network nodes affiliated with a particular business; and

one or more of said network nodes affiliated with a particular business branch.

68. The system of claim 65, wherein said configuration of said request further comprises identification of at least one of said network nodes categorized by at least one of the following parameters:

at least one selected day;

at least one selected hour;

at least one selected said network node;

at least one missed day;

at least one missed hour;

at least one disconnected network node;

at least one down network node; and

at least one exception-reported network node.

69. The system of claim 65, wherein said configuration of said request further comprises identification of at least one of said network nodes categorized by at least one

of the following parameters:

file type;

file type name; and

archive directory.

70. The system of claim 60, further comprising:

means for managing said response associated with said network node.

71. The system of claim 60, wherein said network node comprises a plurality of delivery system nodes.

72. The system of claim 60, wherein said network node comprises a plurality of secondary system nodes.

73. The system of claim 60, wherein said network node is an automated teller machine.

74. The system of claim 60, wherein said network node is a bank server.

75. The system of claim 60, wherein said network node is a communication server.

76. The system of claim 60, wherein said network node is a financial server.

77. The system of claim 60, wherein said network nodes comprise a financial institution's network nodes.

78. The system of claim 60, further comprising:

means for providing a help mechanism to a user.

79. A platform-independent system for retrieving and managing data in at least one communications network having a plurality of destination nodes interconnected with communication lines, comprising:

a network automated information retrieval system coupled to at least one communications network having a plurality of nodes;

an interactive user module coupled with a network management system server connected to said communications network having a plurality of nodes;

a plurality of client terminals coupled to said interactive user module for user interaction with said network automated information retrieval system.

80. The system of claim 79, wherein said interactive user module is communicated by a service application of said automated information retrieval system to said network management system server.

81. The system of claim 79, wherein said interactive user module is communicated by said service application of said automated information retrieval system to one of a internet, an intranet, or an extranet.

82. The system of claim 79, wherein said communications network further comprises memory.

83. The system of claim 79, wherein said communications network further comprises at least one database stored in memory.

84. The system of claim 79, wherein said communications network further comprises at least one database processor capable of processing data contained in said database.

85. The system of claim 79, further comprising a request to said automated information retrieval system.

86. The system of claim 85, wherein said request is communicated to said automated information retrieval system by said user interaction with said interactive user module.

87. The system of claim 86, wherein said interactive user module comprises at least one of the following user modules selected from a group of user modules comprising:

an administrator module;

an operator module;

a help module; and

a status module.

88. The system of claim 85, wherein said request further comprises a retrieval command to query at least one destination node in real-time.

89. The system of claim 79, further comprising:

means for said plurality of network nodes to transmit a response to said request.

means for processing said response from said plurality of network nodes to said request; and

means for storing said response from said plurality of network nodes to said request.

90. The system of claim 89, further comprising:

means for constructing a response log, wherein said response log comprises a plurality of responses from said plurality of network nodes to said request;

means for administering said response log; and

means for printing said response log.

ABSTRACT

The present invention provides platform-independent methods and systems for remotely accessing network nodes and for automatically selecting, retrieving, storing, and managing data within such nodes. The system components may include a plurality of client terminals running an interactive user interface, a network management system server, and at least one communications network having a plurality of nodes. In different possible embodiments of the present invention, the methods and systems may be utilized to perform one or more of the following tasks: (1) provide real-time retrieval of transaction logs and other data; (2) provide configuration and filtering capabilities for automatically scheduling and retrieving transaction logs and other data; (3) provide configuration capabilities for prioritizing scheduling parameters and data retrieval; (4) provide an archive capability for storing transaction logs and other data; (5) provide detailed reports of transaction logs and other data; (6) provide integration with external and internal systems; (7) utilize state-of-the-art technology; and/or (8) allow for real-time system configuration and modifications.

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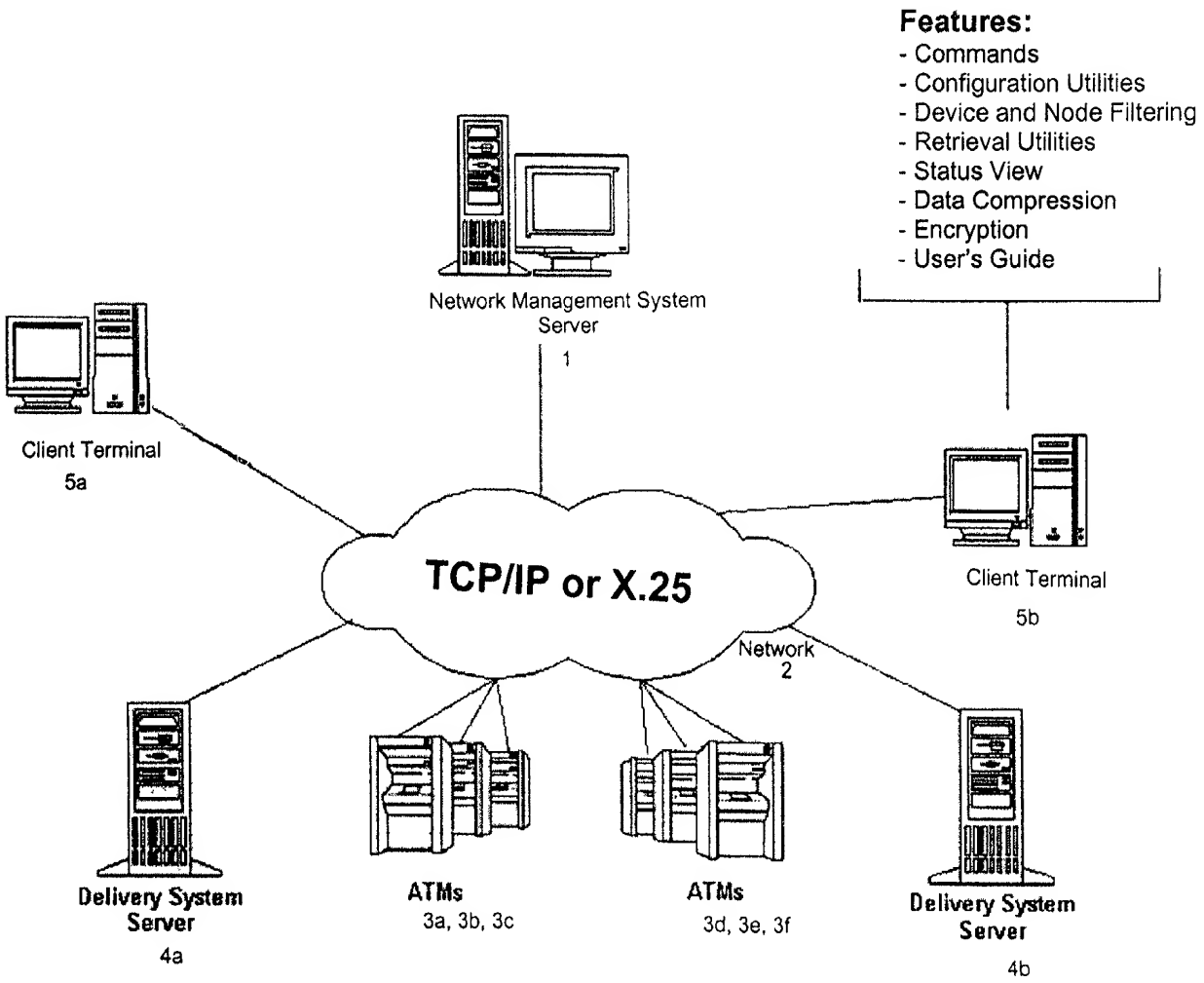

Figure 1

Overview of Network Topology

Daemon Components of the Automated Information Retrieval System

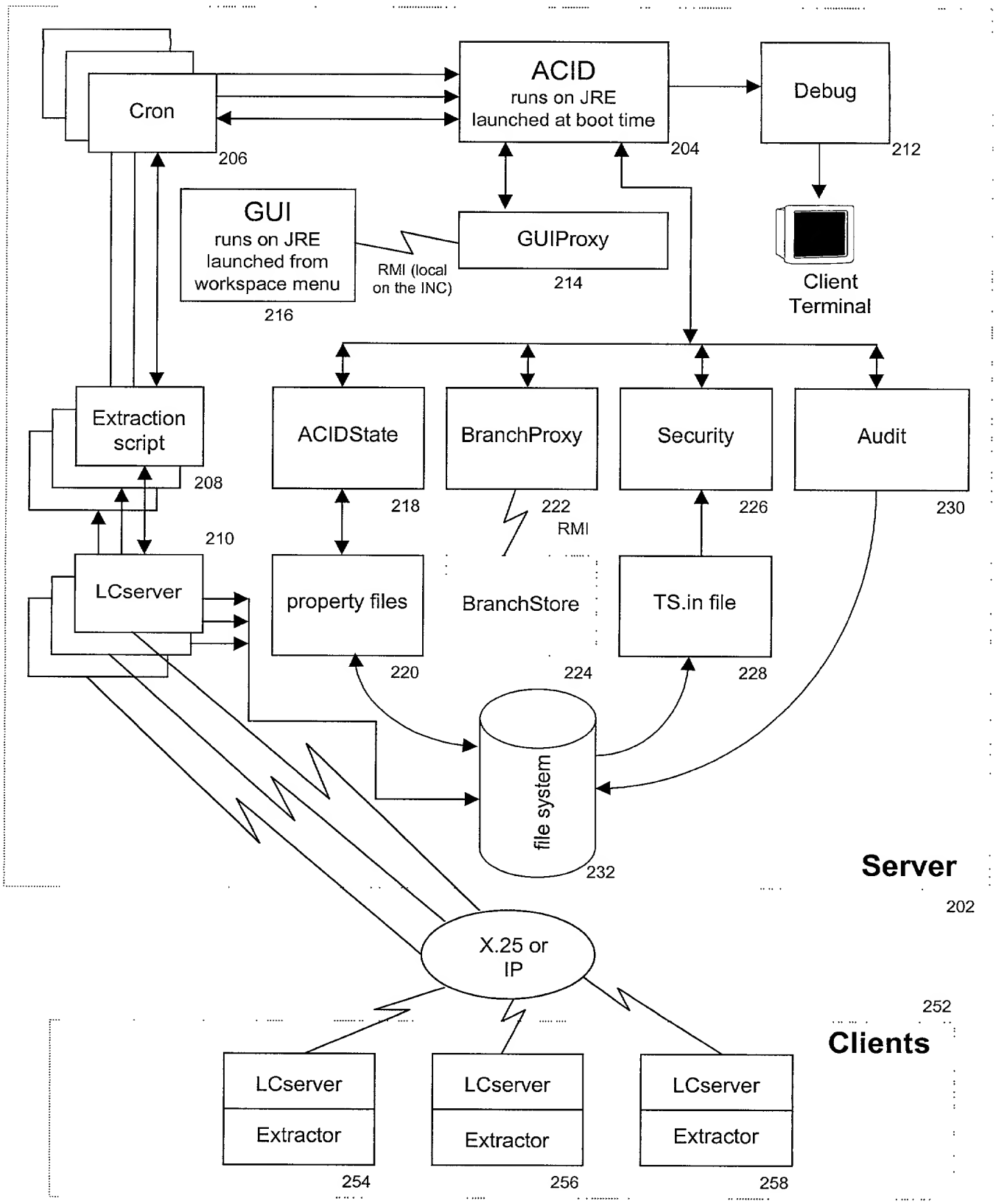

Figure 2

GUI Architecture of the Automated Information Retrieval System

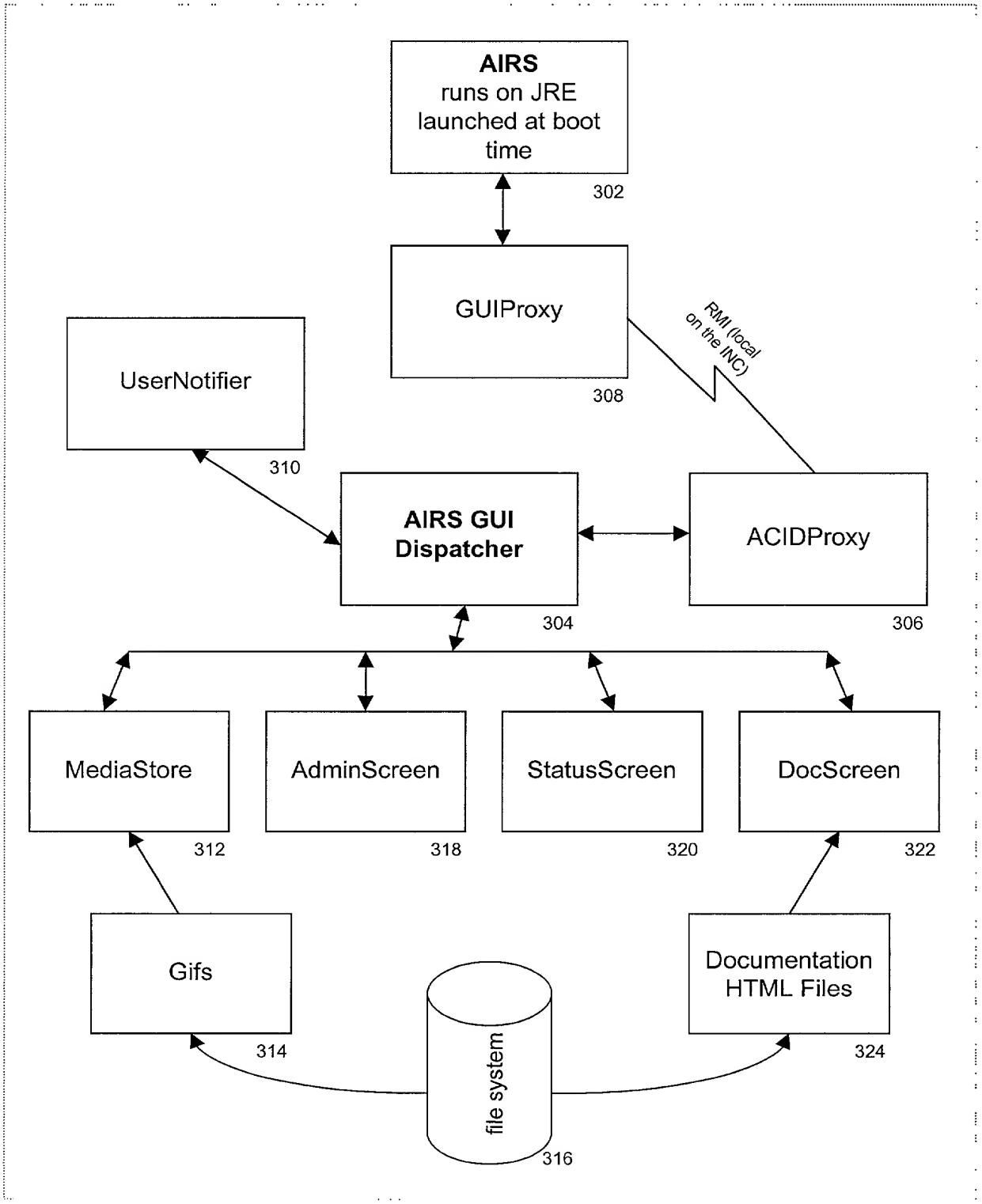

Figure 3

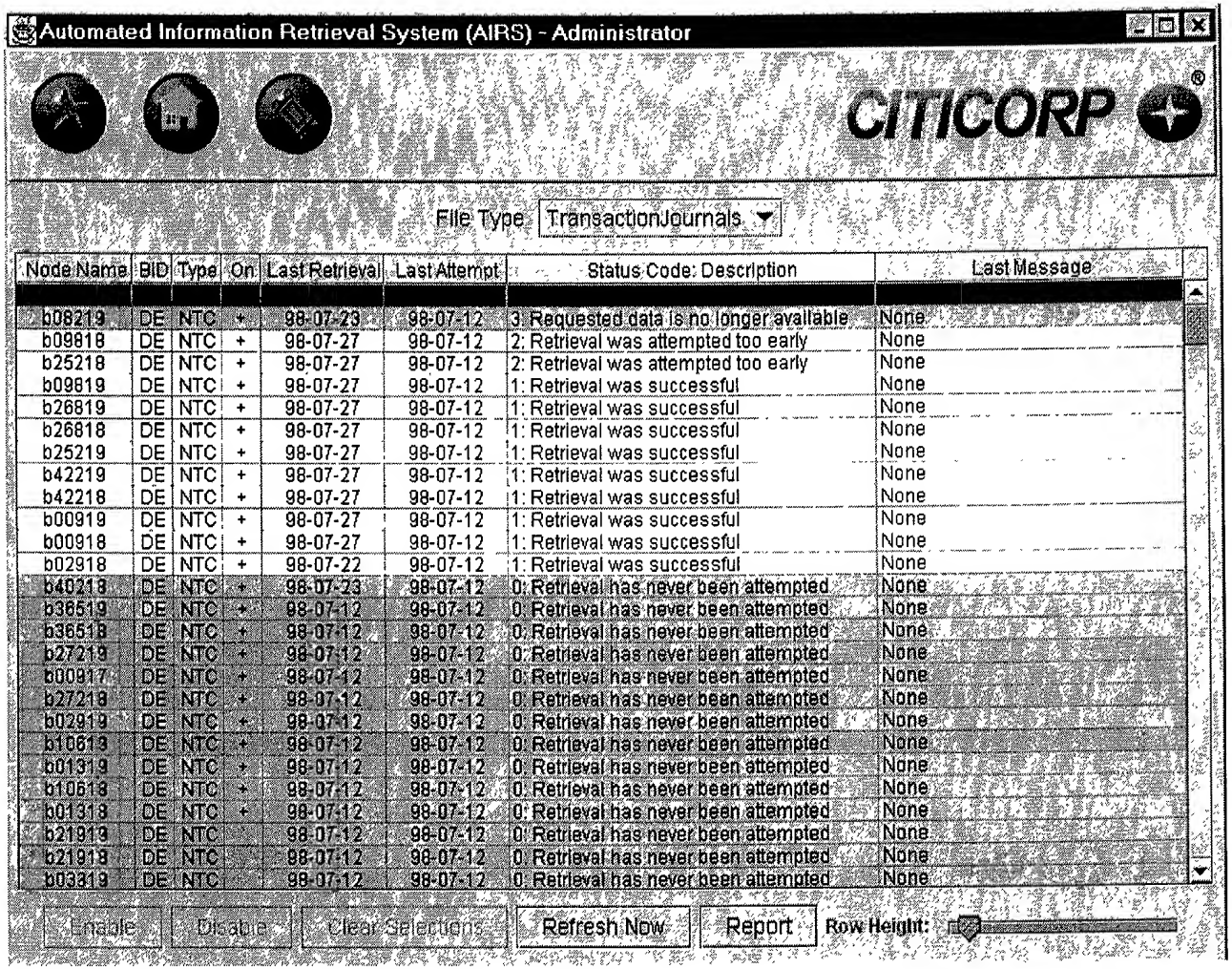
Automated Information Retrieval System (AIRS) - Administrator
CITICORP
File Type: TransactionJournals
Node Name | BID | Type | On | Last Retrieval | Last Attempt | Status Code: Description | Last Message
b08219 | DE | NTC | + | 98-07-23 | 98-07-12 | 3: Requested data is no longer available | None
b09818 | DE | NTC | + | 98-07-27 | 98-07-12 | 2: Retrieval was attempted too early | None
b25218 | DE | NTC | + | 98-07-27 | 98-07-12 | 2: Retrieval was attempted too early | None
b09819 | DE | NTC | + | 98-07-27 | 98-07-12 | 1: Retrieval was successful | None
b26819 | DE | NTC | + | 98-07-27 | 98-07-12 | 1: Retrieval was successful | None
b26818 | DE | NTC | + | 98-07-27 | 98-07-12 | 1: Retrieval was successful | None
b25219 | DE | NTC | + | 98-07-27 | 98-07-12 | 1: Retrieval was successful | None
b42219 | DE | NTC | + | 98-07-27 | 98-07-12 | 1: Retrieval was successful | None
b42218 | DE | NTC | + | 98-07-27 | 98-07-12 | 1: Retrieval was successful | None
b00919 | DE | NTC | + | 98-07-27 | 98-07-12 | 1: Retrieval was successful | None
b00918 | DE | NTC | + | 98-07-27 | 98-07-12 | 1: Retrieval was successful | None
b02918 | DE | NTC | + | 98-07-22 | 98-07-12 | 1: Retrieval was successful | None
b40218 | DE | NTC | + | 98-07-23 | 98-07-12 | 0: Retrieval has never been attempted | None
b36519 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b36518 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b27219 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b00917 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b27218 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b02919 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b10619 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b01319 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b10618 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b01318 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b21919 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b21918 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
b03319 | DE | NTC | + | 98-07-12 | 98-07-12 | 0: Retrieval has never been attempted | None
Enable
Disable
Clear Selections
Refresh Now
Report
Row Height:

Figure 4

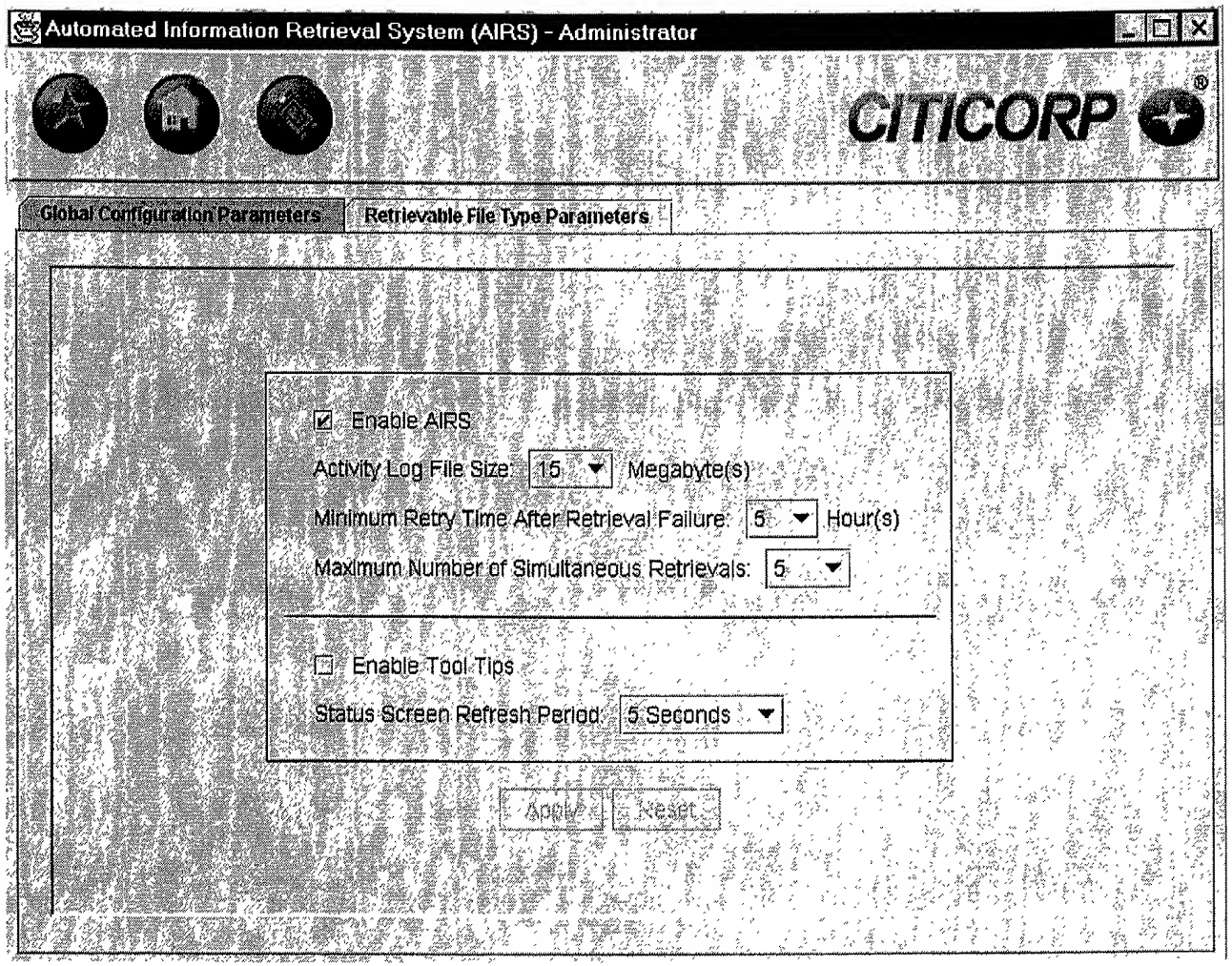
Automated Information Retrieval System (AIRS) - Administrator
CITICORP
Global Configuration Parameters
Retrievable File Type Parameters
Enable AIRS
Activity Log File Size: 15 Megabyte(s)
Minimum Retry Time After Retrieval Failure: 5 Hour(s)
Maximum Number of Simultaneous Retrievals: 5
Enable Tool Tips
Status Screen Refresh Period: 5 Seconds
Apply
Reset

Figure 5

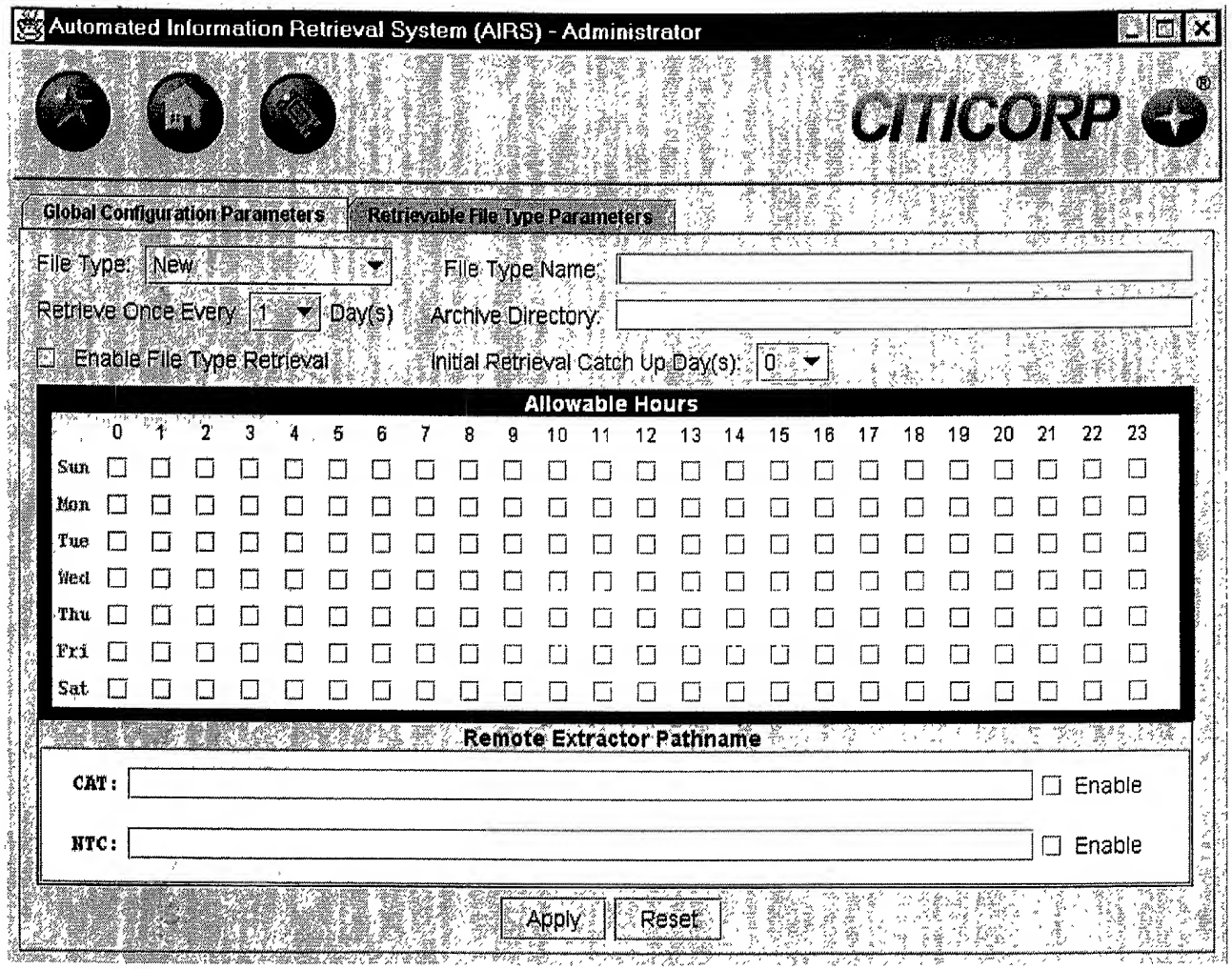
Automated Information Retrieval System (AIRS) - Administrator
CITICORP
Global Configuration Parameters
Retrievable File Type Parameters
File Type: New
File Type Name:
Retrieve Once Every 1 Day(s)
Archive Directory:
Enable File Type Retrieval
Initial Retrieval Catch Up Day(s): 0
Allowable Hours
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Sun
Mon
Tue
Wed
Thu
Fri
Sat
Remote Extractor Pathname
CAT:
Enable
NTC:
Enable
Apply
Reset

Figure 6

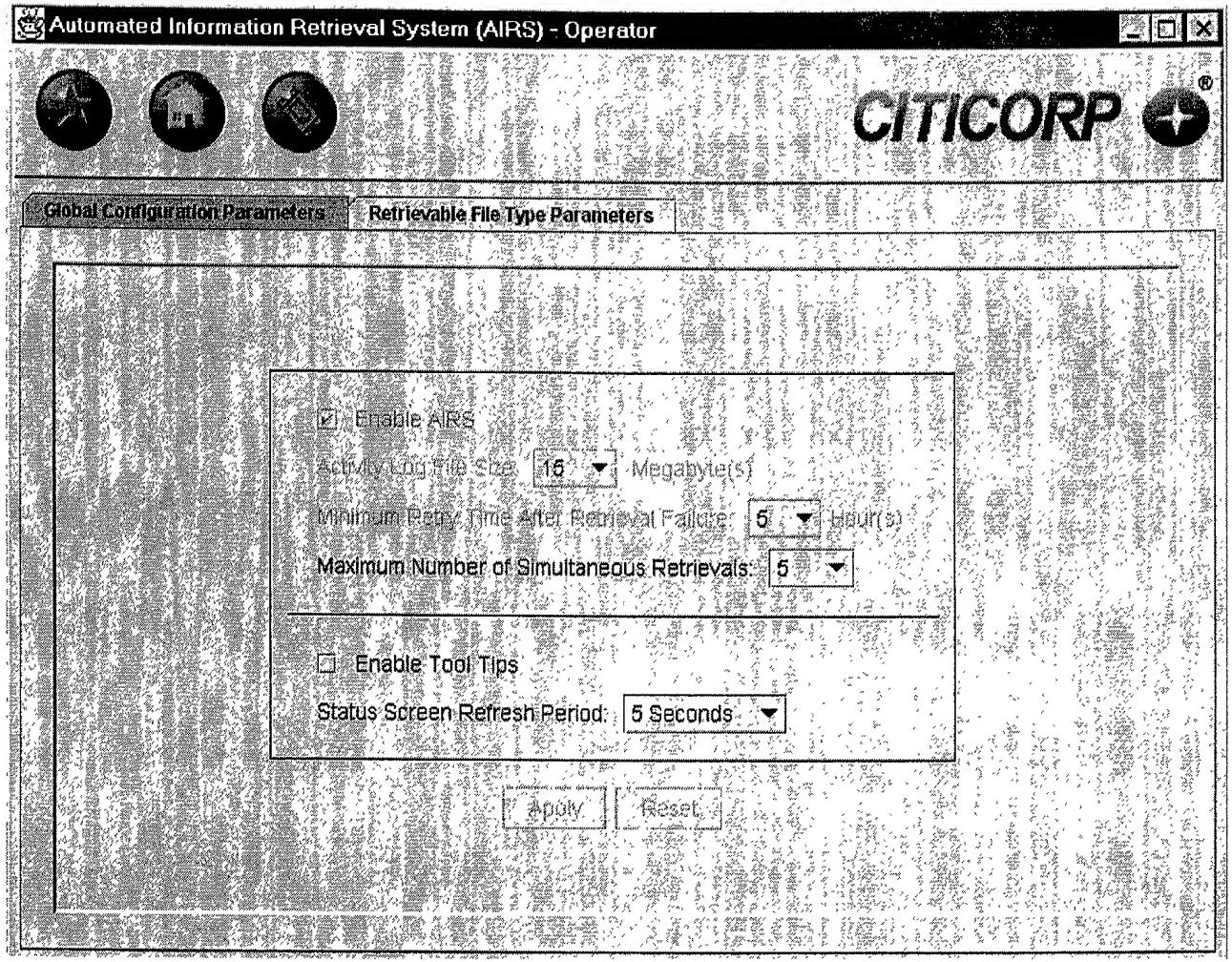
Automated Information Retrieval System (AIRS) - Operator
CITICORP
Global Configuration Parameters
Retrievable File Type Parameters
Enable AIRS
Activity Log File Size: 15 Megabyte(s)
Minimum Retry Time After Retrieval Failure: 5 Hour(s)
Maximum Number of Simultaneous Retrievals: 5
Enable Tool Tips
Status Screen Refresh Period: 5 Seconds
Apply
Reset

Figure 7

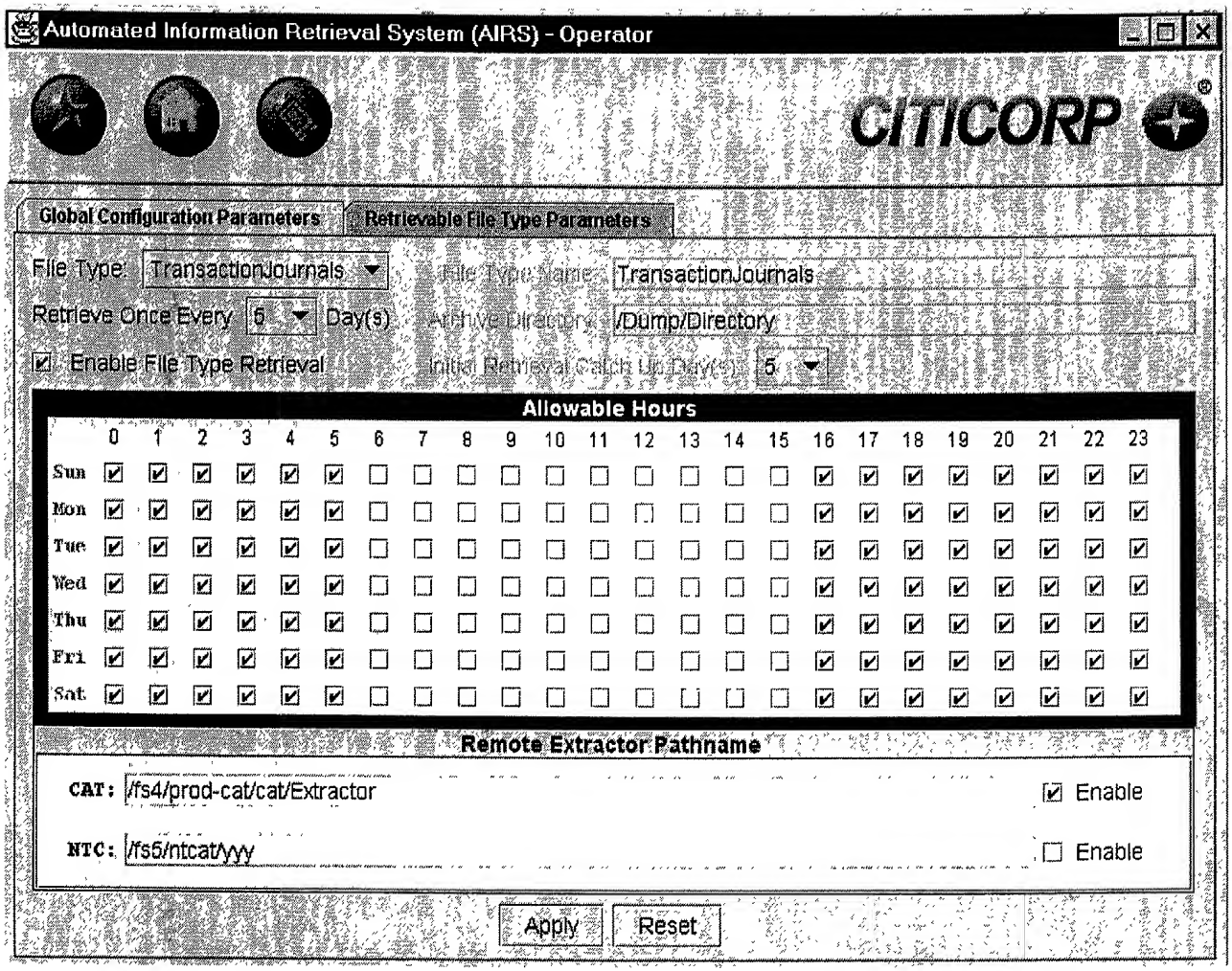
Automated Information Retrieval System (AIRS) - Operator
CITICORP
Global Configuration Parameters
Retrievable File Type Parameters
File Type: TransactionJournals
File Type Name: TransactionJournals
Retrieve Once Every 5 Day(s)
Archive Directory: /Dump/Directory
Enable File Type Retrieval
Initial Retrieval Catch Up Day(s): 5
Allowable Hours
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Sun
Mon
Tue
Wed
Thu
Fri
Sat
Remote Extractor Pathname
CAT: /fs4/prod-cat/cat/Extractor
Enable
NTC: /fs5/ntcat/yyy
Enable
Apply
Reset

Figure 8

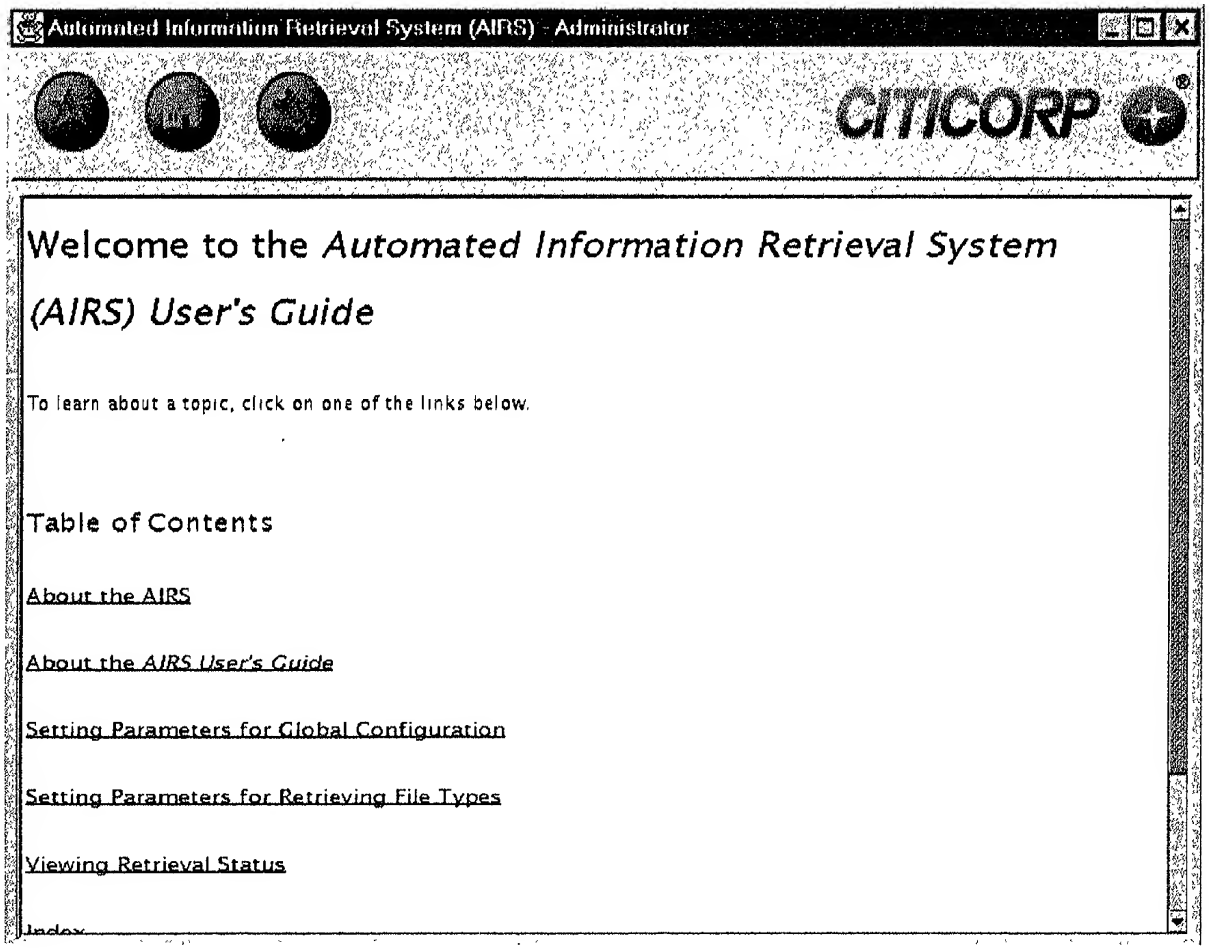
Automated Information Retrieval System (AIRS) - Administrator
CITICORP
Welcome to the Automated Information Retrieval System (AIRS) User's Guide
To learn about a topic, click on one of the links below.
Table of Contents
About the AIRS
About the AIRS User's Guide
Setting Parameters for Global Configuration
Setting Parameters for Retrieving File Types
Viewing Retrieval Status
Index

Figure 9

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION
English Language Declaration

As a below named inventor, I hereby declare that:
My residence, post office address and citizenship are as stated below next to my name.
I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: Methods and Systems for Automated Information Retrieval;
the specification of which

☒ is attached hereto.

☐ was filed on _____ as

☐ Application Serial No. _____

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent of inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

			Priority Claimed
(Number)	(Country)	(Day/Month/Year Filed)	Yes No
(Number)	(Country)	(Day/Month/Year Filed)	Yes No

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and insofar
as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which be came available between the filing date of the prior application and the national or PCT international filing date of this application:

60/138,348 (Application Serial No.)	6/9/1999 (Filing Date)	Pending (Status) (patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

English Language Declaration

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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